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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,303	09/22/2005	Yuki Watanabe	ASAIN 0167	1166

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EXAMINER

BAKER, DAVID S

ART UNIT	PAPER NUMBER
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2884

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/550,303

Applicant(s)

WATANABE ET AL.

Examiner

David S. Baker

Art Unit

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/22/05, 4/13/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed on 22 September 2005 has been accepted and entered.

Claim Objections

2. Claim 5 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim must refer to such other claims in the alternative only. See MPEP § 608.01(n). An apparent typo occurs in the claim; the reference to claim 4 has not been dashed out in a similar manner to the reference to claim 3. For examination purposes, the typo has been overlooked so that a treatment on the merits is possible – assuming that claim 5 is meant to be dependent on claim 2. Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-3, 5, and 9-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.
5. The claims are directed to a judicial exception; as such, pursuant to the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106), the claims must have either physical transformation and/or a useful, concrete and tangible result. The claims fail to include transformation from one physical state to another. Although, the claims appear useful and concrete, there does not appear to be a tangible result claimed.

Regarding claim 1, merely “wherein presence and absence of the target component in the object is determined” would not appear to be sufficient to constitute a

tangible result, since the outcome of the “determining” step has not been used in a disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application can be realized. As such, the subject matter of the claims is not patent eligible.

Regarding claim 2, merely “calculating a target density” would not appear to be sufficient to constitute a tangible result, since the outcome of the “calculating” step has not been used in a disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application can be realized. As such, the subject matter of the claims is not patent eligible.

Regarding claim 3, merely “calculating a two-dimension distribution” would not appear to be sufficient to constitute a tangible result, since the outcome of the “calculating” step has not been used in a disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application can be realized. As such, the subject matter of the claims is not patent eligible.

Regarding claims 5 and 9-10, merely “inspecting a target” would not appear to be sufficient to constitute a tangible result, since the outcome of the “inspecting” step has not been used in a disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application can be realized. As such, the subject matter of the claims is not patent eligible.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2884

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-4 and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Jacobsen (US 5,939,721 A).

Regarding claim 1, Jacobsen discloses a method of inspecting a target by terahertz wave spectroscopic comprising: measuring a baseline of terahertz wave absorbencies ranging about from 1 THz to 3 THz (F:1-3 and 7-10, C:5 L:22 thru C:6 L:40, C:9 L:25 thru C:11 L:34); and irradiating an object with terahertz waves of a plurality of frequencies to measure absorbance spectra of the object (F:1-3 and 7-10, C:5 L:22 thru C:6 L:40, C:9 L:25 thru C:11 L:34), wherein presence and absence of a target component in the object is determined on the basis of the baseline spectrum and the absorbance spectrum of the object (F:1-3 and 7-10, C:5 L:22 thru C:6 L:40, C:9 L:25 thru C:11 L:34).

Regarding claim 2, Jacobsen discloses a density calculation step of calculating a target density on the basis of the baseline spectrum and the absorbance spectrum of the object (F:1-3 and 7-10, C:5 L:22 thru C:6 L:40, C:9 L:25 thru C:11 L:34).

Regarding claim 3, Jacobsen discloses two-dimensionally scanning the object with terahertz waves to measure a two-dimensional distribution of the absorbance spectrum I of penetration light, and the density calculation step comprising a step of calculating a two-dimensional density distribution (F:1-3 and 7-10, C:5 L:22 thru C:6 L:40, C:9 L:25 thru C:11 L:34).

Regarding claim 4, Jacobsen discloses two-dimensionally displaying the two-dimensional density distribution (F:1-3 and 7-10, C:5 L:22 thru C:6 L:40, C:9 L:25 thru C:11 L:34).

Regarding claim 6, Jacobsen discloses an apparatus for inspecting a target using terahertz wave spectroscopic measurement, comprising: a terahertz wave generation device that generates terahertz waves at a plurality of wavelengths (F:1-3 and 7-10, C:5 L:22 thru C:6 L:40, C:9 L:25 thru C:11 L:34); a two-dimensional scan device that scans an object with terahertz waves of a plurality of wavelengths (F:1-3 and 7-10, C:5 L:22 thru C:6 L:40, C:9 L:25 thru C:11 L:34); a spectroscopic measurement device that measures a two-dimensional absorbance distribution of the object (F:1-3 and 7-10, C:5 L:22 thru C:6 L:40, C:9 L:25 thru C:11 L:34); and a target density calculation device that calculates a two-dimensional density distribution on the basis of a baseline spectrum of the target and the two-dimensional absorbance distribution (F:1-3 and 7-10, C:5 L:22 thru C:6 L:40, C:9 L:25 thru C:11 L:34).

Regarding claim 7, Jacobsen discloses an image display device that two-dimensionally displays an image of the two-dimensional density distribution (F:1-3 and 7-10, C:5 L:22 thru C:6 L:40, C:9 L:25 thru C:11 L:34).

Regarding claim 8, Jacobsen discloses two-dimensionally displaying the two-dimensional density distribution (F:1-3 and 7-10, C:5 L:22 thru C:6 L:40, C:9 L:25 thru C:11 L:34).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 5 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobsen (US 5,939,721 A in view of Sharaf (US 6,015,667 A).

Regarding claims 5 and 9-10, Jacobsen discloses all of the claimed limitations, but does not disclose expressly wherein terahertz waves of N number of different wavelengths are used for M number of targets, N being equal to or larger than M, when N is equal to M, the two-dimensional density distribution is calculated by [2-D density distribution] = [2-D baseline spectrum]⁻¹[2-D absorbance spectrum], and when N is larger than M, the two-dimensional density distribution is calculated by [2-D absorbance spectrum] = [2-D baseline spectrum][2-D density distribution], using a least square method. Sharaf discloses a spectral array detector with a multicomponent analysis

comprising using N number of different wavelengths for M number of targets, N being equal to or larger than M, when N is equal to M, the two-dimensional density distribution is calculated by $[2\text{-D density distribution}] = [2\text{-D baseline spectrum}]^{-1} [2\text{-D absorbance spectrum}]$ (C:5 L:50 thru C:8 L:8), and when N is larger than M, the two-dimensional density distribution is calculated by $[2\text{-D absorbance spectrum}] = [2\text{-D baseline spectrum}] [2\text{-D density distribution}]$, using a least square method (C:5 L:50 thru C:8 L:8). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the 2-D multicomponent spectral analysis method of Sharaf on the data obtained by the terahertz spectral analysis of Jacobsen. The motivation for doing so would have been to reduce uncertainty in the spectral response by constructing an overdetermined linear system.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 5,623,145 A – Nuss discloses a 2-D terahertz density imaging system.


12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Baker whose telephone number is (571) 272-6003. The examiner can normally be reached on MTWRF 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2884

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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